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ABSTRACT

A study investigated the hypothesis that topic familiarity and assessed difficulty of a second language text correlated positively with performance on reading comprehension tests in languages for special purposes (LSP). Subjects were 177 advanced students of English as a Foreign Language (EFL) at Ben Gurion University (Israel). Faculty from the schools of Humanities and Social Sciences (HSS) and Science and Technology (ST) were asked to assess the difficulty of an HSS-related text and a ST-related text from a college-level EFL reader. The texts were found to be of comparable difficulty and comprehensible to an educated layman. Students then took a reading comprehension test using the passages, and were asked to evaluate the passages' difficulty. Significant interaction between faculty and assessed difficulty of text confirms that EFL students find texts related to their fields of study more comprehensible than texts related to other topics. However, results of multiple-choice comprehension questions based on the texts indicate that students' subjective evaluation of the relative difficulty of a text is not necessarily a reliable predictor of their actual performance on reading comprehension tests. Based on these findings, it is argued that creation of many different reading tests on specialized topics at the university level is not justified. A 24-item bibliography and tabulations of study results are appended. (Author/MSE)

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DOES TOPIC FAMILIARITY AFFECT ASSESSED DIFFICULTY AND ACTUAL PERFORMANCE ON READING COMPREHENSION TESTS IN LSP?

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ABSTRACT

The hypothesis that topic familiarity and assessed difficulty of a text correlate positively with performance on reading comprehension tests in LSP was investigated in a study with 177 advanced students of English at Ben Gurion University. Subjects from the faculties of Humanities/Social Science (HSS) and Science/Technology (ST) were asked to assess the difficulty of a HSS-related text and a ST-related text. Significant interaction between faculty and assessed difficulty of text confirms that EFL students rate texts related to their field of study as being more comprehensible than texts related to other topics. The results of multiple-choice type comprehension questions based on the two texts indicate that students' subjective evaluation of the relative difficulty of a reading text is not always a reliable index of their actual performance on reading comprehension tests. The findings of this study have practical implications for testing reading comprehension in LSP

INTRODUCTION

With the growing tendency to structure EFL language courses to fit the specific needs and interests of students from different disciplines, the question of the nature of the text used in reading comprehension tests

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assumes great importance. As Alderson and Urquhart (1983, 1985a, 1985b) note, there are valid arguments both for and against the use of the content-related text as a vehicle for testing reading comprehension. It can be claimed that background knowledge in the content area of a reading passage can enable students to perform at their highest ability level on reading comprehension tests. On the other hand, tests which are too specialized may assess subject matter knowledge more than they test reading proficiency. Subject-related texts might also discriminate against individuals or groups who happen to possess less background knowledge in a particular field. If different specialized texts are used to test students from various departments, the problem of comparable difficulty of texts and tests must also be considered.

A question that has been considered in second and foreign language reading comprehension research is whether interest in or preference for a topic affects reading comprehension results. Although empirical evidence is limited, there is some indication that interest in a topic does not necessarily correlate positively with grades on reading comprehension tests.

Nelson (1985) found no significant correlation between performance and preference on matched readings of American and Egyptian topics for Egyptian subjects. Williams' study (1983) showed that while high interest material enhanced comprehension, low interest material did not depress comprehension when compared to neutral interest material. These results are compatible with the findings of Steffensen et al. (1979), Reynolds et al. (1982), and Lipson (1984) who have suggested that partial knowledge can interfere with comprehension if it conflicts with information in the text. Maria and MacGinitie (1981, 1982, 1983), Carrell and Eisterhold (1983), Alvermann et

al. (1985), and Gordon (1987) also concluded that incomplete or inaccurate prior knowledge or knowledge that is in conflict with the information presented in a text interferes with reading comprehension.

Baldwin et al. (1985) investigated the effects of topic interest and prior knowledge on reading comprehension using seventh- and eighth-grade students. They found that although there was no correlation between topic interest and prior knowledge, it seems that prior knowledge and topic interest have an additive effect on reading comprehension. Using college students as subjects, Weber (1980) and Entin (1981) obtained results that indicated that interest and prior knowledge were correlated and that the two factors had an additive effect on comprehension. Baldwin et al. (1985) suggest that these differences stem from adult perceptions and adult prerogatives. Whereas school children are forced to study topics in which they may or may not be interested but about which they may be knowledgeable, the situation is different for adults. As people get older, they tend to specialize; in such situations interest and knowledge may closely correspond.

The studies reviewed investigated the relationship between such factors as topical interest of the text, familiarity with the topic, prior knowledge related to the text topic, and performance on reading tests. They give no indication, however, as to whether tests based on content-related texts would be assessed by subjects as being easier than tests based on other topics, although this is implicitly assumed (Alderson and Urquhart 1985b); neither do they indicate whether such subjective assessment of test difficulty is a reliable index of actual performance on the test. The present

study addresses this issue. The research questions were formulated as follows.

1. Will students of EFL perform better on a reading comprehension test whose content is on a topic that is related to their general field of study than on a reading comprehension test whose content is on a topic that is related to another subject, given that the texts are of approximately comparable difficulty and comprehensible to the educated layman?
2. Will students of EFL rate a reading comprehension test on a topic that is not related to their field of study as being more difficult than one whose topic is related to their field of study, given that the texts are of approximately comparable difficulty and comprehensible to the educated layman?

METHOD

Subjects

The subjects consisted of 177 advanced students at Ben Gurion University of the Negev: 80 students in the Faculties of Science and Technology (ST) and 97 students in the Faculty of Humanities and Social Sciences (HSS).

Materials and Procedure

Two passages were excerpted from articles that had appeared in the Humanities and Social Science (HSS) reader and in the Science and Technology (ST) reader. The articles in these readers, which are used in the EFL courses at Ben Gurion University, are taken from academic journals in fields related to the students' major subjects. The texts themselves, however, are not

highly specific, since the students are mostly first-year students and are thus only at the beginning stages of their academic studies. In addition, the EFL teachers themselves are not content-area experts. The passage excerpted from the HSS reader dealt with the ethical considerations of using human subjects in medical research, the passage from the ST reader dealt with ways to reduce fuel consumption in automobiles. Both passages were approximately the same length and were judged by five experienced EFL teachers at Ben Gurion University to be comprehensible to the educated layman.

The format of the tests was similar to tests administered during the school year. Both reading passages were presented to all the subjects. Each reading passage was followed by a set of fourteen multiple-choice comprehension questions which focused on general comprehension, recognition of referents, and ability to deduce vocabulary in context. In half the tests the HSS-related subtest preceded the ST-related subtest while in the other half the order was reversed. The two versions of the test were distributed randomly. After completing the test, students were asked to rate the difficulty of each subtest on a scale of 1-5, from very easy (1) to very difficult (5) (Appendix A). The use of a dictionary was not allowed.

RESULTS

The means, N's and standard deviations for scores of each content-area text passage are presented in Table 1.

Insert Table 1. about here.

In a two-way analysis of variance text by faculty the two main effects as well as the interaction were significant. Students from the Faculties of Science and Technology scored higher (X=74.6) than students from the Faculty of Humanities and Social Sciences (X=60) on the entire test battery as well as on each subtest [F, (1,165 = 69.75) P 0.0001]. Mean score on the HSS-related subtest (X=70.41) was significantly higher than on the ST-related subtest (X=62.85) [F, (1,165 = 25.87) P 0.0001]. The two-way interaction text by faculty was also highly significant [F,(1,165 = 19.08) P 0.0001], but while HSS students performed much better on the text from the HSS reader, there was no significant difference in performance on the two texts by ST students.

The means and standard deviations of the assessed difficulty score for each passage by faculty are presented in Table 2.

Insert Table 2. about here.

A two-way analysis of variance text by faculty on the questionnaire yielded a significant main effect for faculty [F, (1,193 = 9.69) P 0.0025], but no significant main effect for text. In general, students from the HSS Faculty rated the entire test as being more difficult (X = 3.55) than students from the ST Faculties (X = 3.25). A two-way interaction text by faculty was also highly significant [F, (1,143 = 13.16) P 0.0001]. HSS students rated the ST-related subtest as being more difficult than the HSS-related subtest (3.77 vs. 3.33), while ST students rated the HSS-related subtest as being more difficult than the ST-related subtest (3.60 vs. 2.89).

Test reliability computed for the entire test battery (Kuder Richardson formula 20 = 0.73) proved acceptable.

DISCUSSION

The answer to our first research question, will students perform better on a reading comprehension test whose reading content is on a topic that is related to their general field of study than on a reading comprehension test whose content is related to another subject, was inconclusive. As in a previous study (Shoham, Peretz, and Vorhaus 1987), students from the Faculties of ST obtained higher mean scores not only on the ST-related subtest but also on the HSS-related subtest. It is interesting to note that Koh (1985), in a study with several groups of students, also found that science students performed best on reading comprehension tests, even when the texts were related to fields of study other than their own. Koh (1985) attributes this success to the better language proficiency of the science students which could compensate for ignorance of the subject matter. In our case, although we did not test for language proficiency separately, the population in the Faculties of ST come from the same general secondary school system as the population in the Faculty of HSS. Indeed, a considerable percentage of the ST students come from vocational high schools in which, if anything, the level of English instruction is lower than in the regular high schools. We therefore have no reason to believe that in our situation high language proficiency could account for the overall higher scores of these students. A possible explanation for the better performance of the ST students could be that the higher entrance requirements to these faculties translates into students with overall higher learning competence.

Another possibility, although this is only a conjecture, is that ST students are trained to read more carefully in their content areas and are therefore more

discriminating readers. We have no way of ascertaining how and if students made use of whatever relevant background knowledge they possessed relating to the ST-related text. We can only note that they did not seem to be disadvantaged by being tested on a text outside their field of study. This can also be interpreted to mean that they did not seem to be especially advantaged when they were tested on a text related to their field of study. Our findings are compatible with the conclusions of both Clapham (1990) and Carrell (1983). Clapham (1990) found that "subject area had no significant effect on scores" (p. 11) and, in some cases, "students appeared, if anything, to do slightly better at the tests outside their field of study" (p. 11). Carrell (1983) noted that "nonnative readers show virtually no significant effects of background knowledge" (p. 183). It is suggested by Carrell (1983) that nonnative readers, unlike native readers, do not activate existing content schemata; in other words, they do not make the necessary connections between the text and appropriate background knowledge.

In the case of the HSS students, their mean on the ST-related subtest was considerably lower than their mean on the HSS-related subtest ($\bar{X}$=53 vs. $\bar{X}$=66.6). It thus seems that the HSS students were disadvantaged by being tested on a text that was related to a totally unfamiliar field of study, even if the text did not require specialized knowledge for comprehension. The more general topic of the HSS-related text, which was not directly related to any specialized field of study, turned out to yield higher scores.

The question whether students of EFL would rate a reading comprehension text on a topic that is not related to their field of study as being more difficult than one whose topic is related to their field of study was answered

positively. There was a strong interaction text-topic by faculty on difficulty rating. This seems to indicate that students feel more comfortable with a text on a topic that is related to their field of studies and that they feel more threatened by a text on a topic that appears unfamiliar.

In the case of the HSS students, assessed difficulty and actual performance seem to match. But for students of ST, actual performance on the HSS-related subtest was about the same as on the ST-related subtest, although the former was rated as being considerably more difficult. These results can be interpreted in basically two ways.

First, it is possible that students rated the relative difficulty, i.e. their degree of comprehension of the texts, accurately, but that the scores on the test did not present a true picture of their comprehension. This explanation is consistent with doubts expressed by researchers such as Shohamy (1984) and Alsanian (1985) about the degree to which reading comprehension tests, and especially the multiple-choice test format, measure comprehension rather than some other ability.

Another interpretation of the results is that students did not assess text difficulty correctly. Carrell (1983) has already suggested that "nonnative readers appear not to have a good sense of how easy or difficult a text is for them to understand" (p. 183). In our case, they misjudged the degree of their comprehension either because they were mistakenly reassured in the case of the apparently familiar topic or unduly intimidated by the apparently non-familiar topic. Carrell (1988) notes that ESL readers may "rely on prior knowledge to infer or guess what is likely to be in the text rather than

actually sampling or processing much of the text" (p. 108), this may also be true of EFL readers. This means that students implicitly assumed that they would know more about a topic that seemed familiar than they would about one which appeared less familiar. In fact, however, this was true only in the case of the HSS students, who really know very little about the different kinds of engines and the factors that affect fuel consumption. As to why the ST students rated the HSS-related subtest as being more difficult, although its content was quite general, we can only surmise that the word "ethics" in the title suggested to them that this passage was on a philosophical subject, i.e. something far removed from their field of study.

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The logical assumption that students prefer texts on topics that are, or appear to be, related to their field of study and that they rate tests based on such topics as being easier than tests based on topics that are related to other subjects is confirmed by the study.

At the same time, the results indicate that students' "hunches" of how appropriate or fair a test is are not not always a reliable index of their performance on reading tests. We suggest that this may be either because a given test does not constitute a reliable enough measure of comprehension of the text or because the students' assessment of their own comprehension is affected by their own expectations that a test on a more familiar topic will be more comprehensible. The two interpretations are not necessarily mutually exclusive.

Our last finding, that scores obtained on tests based on a general or less familiar topic are comparable to scores obtained on tests based on a topic that was generally more familiar, has practical implications. It appears that the creation of many differentiated reading tests based on specialized topics in such "real" testing situations as final examinations in large academic institutions is not justified in terms of the time and effort entailed, especially if such tests are to be utilized on a "one-time" basis.

Directions for future research that are suggested by this study are a finer analysis of test-task and question-types and the effect of more specialized texts on tests of reading comprehension. It would also be useful to use mentalistic measures in order to learn more about how subjects make use of textual and extra-textual information while answering reading comprehension tests.

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Table 1. Means and standard deviations of scores* for each text by faculty

Text Faculty	Ethics of Experimentation (HSS)	Fuel Economy of Light Vehicles (ST)	Mean Score for Faculty
HSS n = 97	X = 66.6 sd = 14.6	X = 53.5 sd = 17.1	X = 60
ST n = 80	X = 74.9 sd = 13.5	X = 74.3 sd = 13.3	X = 74.6
Mean Score for Text	70.41 sd 14	62.85 sd 15.1	

* on a scale of 0-100

Table 2. Means and standard deviations of the assessed difficulty score* for each passage by faculty

Text Faculty	Ethics of Experimentation (HSS)	Fuel Economy of Light Vehicles (ST)	Mean Difficulty Score of Entire Test
HSS n = 80	X = 3.3 sd = .76	X = 3.8 sd = .89	X = 3.6
ST n = 65	X = 3.6 sd = .70	X = 2.9 sd = .75	X = 3.2
Mean Difficulty Score for Text	X = 3.5	X = 3.4	

*on a scale of 1-5

Appendix A. Student questionnaire.

Surname:_____
First Name:_____
I.D.:_____

On a scale of 1 (very easy) to 5 (very difficult), rate the difficulty of "Fuel Economy of Light Vehicles".

1	2	3	4	5
very easy	quite easy	average	quite difficult	very difficult

On a scale of 1 (very easy) to 5 (very difficult), rate the difficulty of "Ethics of Experimentation with Human Subjects".

1	2	3	4	5
very easy	quite easy	average	quite difficult	very difficult